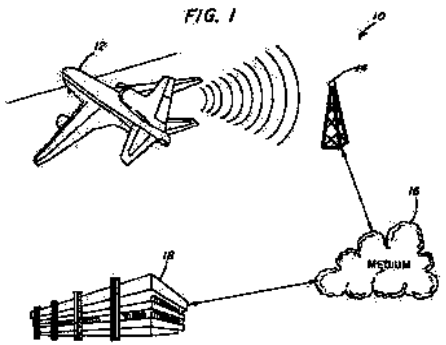
'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
Claim 1[1]		
1. An aircraft data transmission system, the aircraft having a data acquisition unit, and the aircraft including a data storage medium having stored thereon **flight data** gathered in-flight by at least a first sensor on the aircraft, comprising:	data relating to a flight or the performance of aircraft systems or components during a flight	**'990 Patent** "It is common for aircraft to generate records of data relating to flight and performance parameters for each flight of the aircraft. The data typically relate to parameters such as air speed, altitude, vertical acceleration, heading, time, etc. The data are utilized in the event of an accident or a near-accident and to assist in maintenance of the aircraft by detecting faulty components or gradual deterioration of a system or component. . . ." (1:21-28). **C.F.R., Title 14, Subchapter G, Part 121 Appendix M to Part 121—Airplane Flight Recorder Specifications** *The recorded values must meet the designated range, resolution, and accuracy requirements during dynamic and static conditions. All data recorded must be correlated in time to within one second.* [chart entries]

[1] The construction of a term is given only in the first instance in which the term is used, but the same construction applies to all instances of the term that follow unless noted otherwise.

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
		9. Sufficient parameters (e.g. EPR, N1 or Torque, NP) as appropriate to the particular engine being recorded to determine power in forward and reverse thrust, including potential overspeed condition. *22. Each Thrust Reverser Position (or equivalent for propeller airplane)* *43. Additional Engine Parameters (Where capacity permits, the preferred priority is indicated vibration level, N2, EGT, Fuel Flow, Fuel Cut-off lever position and N3.)* *56. Multi-function/Engine Alerts Display format* *62. Engine warning each engine vibration* *63. Engine warning each engine over temp* *64. Engine warning each engine oil pressure low* *65. Engine warning each engine over speed* *71. Engine bleed valve position* 79. Computer failure (critical flight and engine control systems) **Honeywell Patent No. 6,397,128** "This results in the development of high accuracy, fast response engine digital signal sensors which have stimulated requirements for improved flight data monitoring systems." (2:55-57)

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
a communications unit located in the aircraft and in communication with the **data acquisition unit**;	a hardware device for use on an aircraft that acquires data	**'990 Patent** "Aircraft data are typically gathered by a digital flight data acquisition unit (DFDAU)." (1:31-32). "The data acquisition unit 20 includes a digital flight data acquisition unit (DFDAU) processor 22, which includes a storage media for storing flight data in a digital format. The DFDAU processor 22 receives signals from sensors 24 which sense parameters such as air speed, altitude, vertical acceleration, heading, time, etc." (3:7-15).
at least a second sensor configured to sense a landing of the aircraft;	at least a second sensor configured to sense information signaling the aircraft has landed.	**'990 Patent** "When the aircraft lands, ground personnel board the aircraft, remove the media, and mail the media...." (1:33-34) (emphasis added). "At step 82, the gatelink processor 32 receives a weight on wheels interrupt which signals that the aircraft has landed" (4:58-60) (emphasis added). "The processor 32 is responsive to a weight-on-wheels signal, which acts as an interrupt signal to signal the processor 32 to initiate transmission or reception of data when the aircraft has landed." (3:26-30).

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
		"The system also includes a cellular infrastructure in communication with the data communication unit after the aircraft has landed." (Abstract; 1:66-2:1). "Upon receipt of the weight-on-wheels signals from the landing gear of the aircraft 12, the processor 32 prepares the flight data for transmission...." (3:30-32). "An aircraft 12, which has stored flight data, is illustrated after landing." (Figure 1; 2:64-65).  "The application layer 58 compresses the flight data at step 84 and encrypts the data at step 86. At step 88, the data is

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
		segmented into datagrams and UDP/IP packets are constructed. The packets are then placed in a packet queue. The packets are then ready for transmission. . . ." (1:61-65) (emphasis added). "a plurality of cell channels in communication with said serial card, said cell channels for transmitting data via a cellular infrastructure after the aircraft has landed . . ." (Claim 8.d; Claim 14.e). "means for transmitting said flight data from the data acquisition unit, via a cellular infrastructure after the aircraft has landed . . ." (Claim 15.b). "transmitting said flight data via a cellular communications infrastructure after the aircraft has landed . . ." (Claim 18.c). "transmitting said processed data via a cellular infrastructure after the aircraft has landed . . ." (Claim 19.c; Claim 33.d). **'990 Reexamination File History** "As argued by the Patent Owner, the art of record fail to teach an aircraft data transmission system and method comprising, among other limitations, at least one first sensor on the aircraft which gathers in-flight data and at least one

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
		second sensor configured to sense a landing of the aircraft, wherein communication is initiated via a cellular infrastructure in response to the second sensor sensing the landing of the aircraft" (Notice of Intent to Issue Ex Parte Reexamination Certificate (Reason for Patentability) (emphasis added)). **Aeronautical Texts** "The landing process must never be considered complete until the airplane decelerates to the normal taxi speed during the landing roll or has been brought to a complete stop when clear of the landing area. Many accidents have occurred as a result of pilots abandoning their vigilance and positive control after getting the airplane on the ground." (Airplane Flying Handbook, U.S. Department of Transportation, Federal Aviation Administration (1999), 7-10). "The landing phase begins at the final approach fix (FAF) and continues through touchdown and rollout." (Federal RadioNavigation Systems, U.S. Department of Defense and U.S. Department of Transportation (2001) pp. 2-10 (emphasis added)). "Other Landing Accidents." "The Board's investigation found that although the touchdown was uneventful, the

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
		airplane veered off the side of the runway shortly thereafter. . . . " (Aircraft Accident Report, National Transportation Safety Board (July 31, 1997) p. 45). "FDR data indicated that after the airplane's initial touchdown, it became airborne and rolled to the right as it touched down again . . ." (Aircraft Accident Report, National Transportation Safety Board (July 31, 1997) p. 5).
a cellular infrastructure in communication with said communications unit after the aircraft has landed, wherein the cellular infrastructure communicates said flight data;	a cellular voice and/or data network that uses frequencies in the licensed frequency range.	**'990 Patent** "The system of claim 1 wherein said data reception unit includes: a router; and a processor in communication with said router, said processor having a storage unit." (claim 7). **'990 Reexamination** "It is well known in the art of cellular communication that a cellular infrastructure, such as a mobile telephone voice/data network, uses carrier frequencies in the licensed frequency range." Amendment and Response to Office Action in Ex Parte Reexamination (July 26, 2005), p. 10.
and wherein the **communication is initiated when at least**	communication is initiated after at least a second sensor senses	See construction of claim 1.b above. **Dictionary definitions of "when"**

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
the second sensor senses the landing of the aircraft;	information signaling the aircraft has landed.	"after: *call me when you're finished.*" THE NEW OXFORD AMERICAN DICTIONARY 1912 (2nd Ed. 2005). "4. after which, and then." THE CASSELL DICTIONARY AND THESAURUS 1241 (1999).
a data reception unit in communication with said cellular infrastructure		
wherein said flight data includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft.		
Claim 2		
2. The system of claim 1 wherein said data reception unit is in communication with said cellular infrastructure via the Internet.		

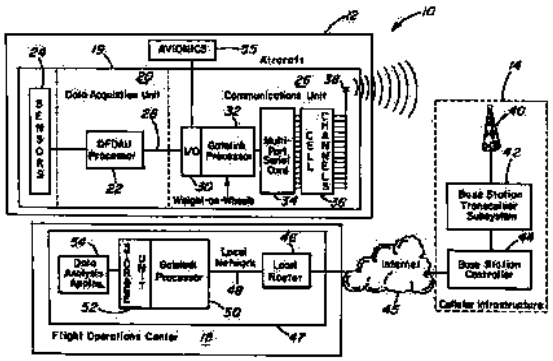
'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
Claim 4		
4. The system of claim 1 wherein said communications unit has at least one **modem** in communication with said cellular infrastructure and said data reception unit has at least one modem in communication with said cellular infrastructure.	Teledyne stipulates to Honeywell's construction: an electronic device that modulates and demodulates an analog carrier, enabling digital information to be sent and received over analog transmission facilities.	
Claim 8		
8. A data system for an aircraft, comprising:		
a digital **flight data** acquisition unit in communication with at least one sensor;	See Claim 1	
a processor in communication with said digital flight **data acquisition unit;**	See Claim 1	
a **serial card** in communication with said	an interface for the transfer of data in a	**IEEE Standard Dictionary of Electrical and Electronics**

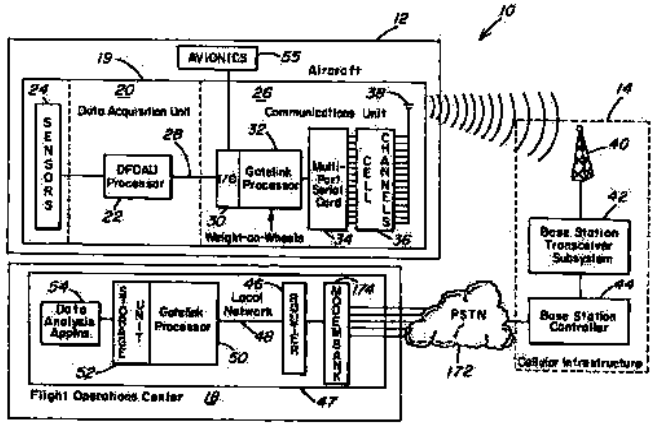
'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
processor; and	sequence of bits.	**Terms (6th ed. 1997)** serial: "Pertaining to sequential transfer, occurrence, or processing of the individual parts of a whole, such as the bits of a character, the characters of a word, etc., using the same facilities for successive parts." (p. 970).
a **plurality of cell channels in communication with said serial card**, said cell channels for transmitting data via a cellular infrastructure after the aircraft has landed,	more than one communication path in a cellular medium able to send information to or receive information from said serial card.	**U.S. Patent. No. 5,550,738 (Bailey, et al., Aug. 19, 1994)** "The cellular modem 43 breaks the travel data into individual, self-contained packets and transfers the data packets over preexisting cellular channels to a router 45 in the reporting system 12. The cellular network utilizes channel-hopping to transmit the data packets during idle time between cellular voice calls. . . ." (4:17-22). **The IEEE Dictionary** channel: "path along which signals can be sent, for example, a data channel, output channel." (p. 146).
wherein the communication between the cell channels and the serial card is **initiated**	automatically: initiated with little or no human involvement after the aircraft has landed.	**'990 Patent** See also construction of claim 1.b

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
automatically upon the landing of the aircraft.	See Claim 1 on "landing"	"Thus, there is a need for an aircraft data transmission system that automatically transfers flight data from an aircraft to flight operation center with little or no human involvement. . . ." (1:55-58) (emphasis added). **Dictionary definitions of "automatic"** "1 (of a device or process) working by itself with little or no direct human control." (THE NEW OXFORD AMERICAN DICTIONARY (2nd Ed. 2005) (emphasis added)). "1 operating without direct or continuous human intervention." (MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY (10th Ed. 1993) (emphasis added)). **Dictionary definition of "upon"** "following on." 19 THE OXFORD ENGLISH DICTIONARY 301 (2nd ed. 1989).
Claim 14		
14. An aircraft, comprising:		
a digital **flight data** acquisition unit in communication with at	See Claim 1	

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
least one sensor; and		
a communications unit in communication with said digital flight **data acquisition unit,** said communications unit including:	See Claim 1	
a processor in communication with said digital flight data acquisition unit;		
a **serial card** in communication with said processor; and	See Claim 8	
a **plurality of cell channels in communication with said serial card**, said cell channels for transmitting data via a cellular infrastructure after the aircraft has landed, wherein the communication between the cell channels and the	See Claims 1 and 8	

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
serial card is **initiated automatically upon landing of the aircraft**.		
Claim 15		
15. An aircraft data transmission system, the aircraft having a data acquisition unit, the aircraft including a data storage medium having stored thereon **flight data** gathered in-flight by at least one sensor on the aircraft, comprising:	See Claim 1	
sensing means for sensing a landing of the aircraft;	This is a means-plus function limitation under 35 U.S.C. §112(6). function: sensing that the aircraft has landed. structure: a sensor capable of sending, or causing to be sent, an electrical signal, and all	**'990 Patent** "The processor is responsive to a weight-on-wheels signal, which acts as an interrupt signal to signal the processor 32 to initiate transmission or reception of the data when the aircraft 12 has landed." (3:26-30) (emphasis added). "at least a second sensor configured to a sense a landing of the aircraft" (Claim 1.b) (emphasis added). "communication is initiated when at least the second sensor senses the landing of the aircraft" (Claim 1.c) (emphasis

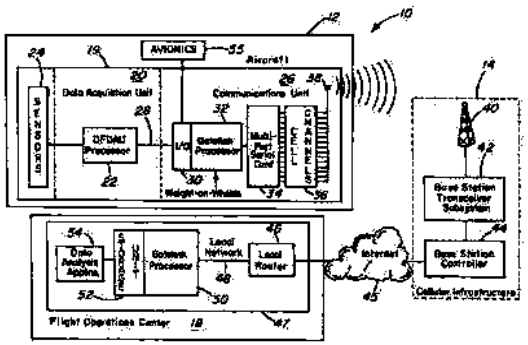
'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
	equivalents thereof. See Claim 1 on landing.	added). "receiving a signal indicating a landing of the aircraft from at least a first [or second] sensor" (Claim 18.b; Claim 19.b) (emphasis added).
means for transmitting said flight data from the **data acquisition unit** via a **cellular infrastructure** after the aircraft has landed,	This is a means-plus-function limitation under 35 U.S.C. §112(6). function: transmitting said flight data from the data acquisition unit via a cellular infrastructure after the aircraft has landed. structure: a communications unit, including a computer processor, serial card, cell channel, and antenna, and all	**'990 Patent** "The system also includes a cellular infrastructure in communication with the data communications unit after the aircraft has landed." (1:66-2:1) (emphasis added). FIG. 2 

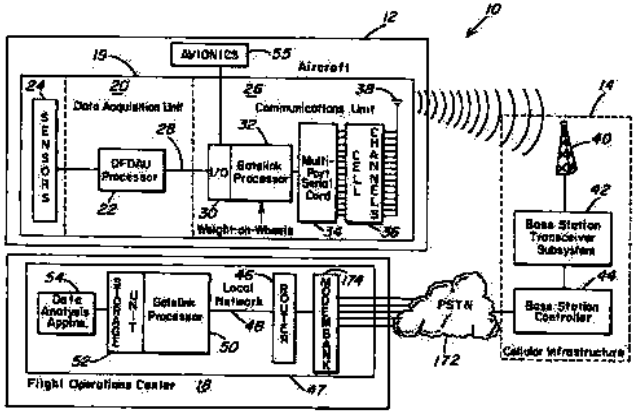
'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
	equivalents thereof.	FIG. 11 
wherein **transmission of the data is initiated when the sensing means sense the landing of the aircraft;**	transmission of data is initiated after a sensor senses information signaling the aircraft has landed.	See Claim 15.a.
means for receiving said flight data from said	This is a means-plus-function limitation	**'990 Patent**

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
cellular infrastructure; and	under 35 U.S.C. §112(6). function: receiving said flight data from said cellular infrastructure structure: a data reception unit, including a router, local network, computer processor, and storage unit, and all equivalents thereof	"A local router 46 in a data reception unit 47 of the flight operations center 18 is connected to the Internet 45, such as via a connection to the backbone of the Internet 45. The router 46 connects a local area network 48 to the Internet 45. The local area network can be of any type of network such as, for example, a token ring network, an ATM network, or an Ethernet network. A gatelink processor 50 is connected to the network 48 and receives the flight data for storage in an attached storage unit 52." (3:52-60) (emphasis added).
wherein said flight data includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft.		
Claim 18		
18. A method of transmitting aircraft flight data from an aircraft, comprising:		
receiving **flight data** from a **data acquisition**	See Claim 1	

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
unit;		
receiving a signal indicating a landing of the aircraft from at least a first sensor;	See Claim 1	
transmitting said flight data via a **cellular communications infrastructure** after the aircraft has landed,	See Claim 1	
wherein the **cellular communications infrastructure is accessed in response to the signal;**	the cellular communications infrastructure is only accessed after receiving the signal.	**'990 Patent** "receiving a signal indicating a landing of the aircraft from at least a first sensor" (Claim 18.b) (emphasis added). "receiving a signal indicating a landing of the aircraft from at least a second sensor" (Claim 33.b) (emphasis added).
receiving said transmitted flight data; and		
wherein said flight data is gathered in-flight by at least a second sensor on the aircraft,		

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
and includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft.		
Claim 19		
19. A computer-implemented method of transmitting aircraft **flight data** from an aircraft, comprising:	See Claim 1	
receiving flight data from a digital flight **data acquisition unit,** wherein said flight data is gathered in-flight by at least a first sensor on the aircraft, and includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft.	See Claim 1	
receiving a signal indicating a landing of the aircraft from at least a second sensor;	See Claim 1	

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
processing said flight data to prepare said data for transmission; and		
transmitting said processed data via a **cellular infrastructure** after the aircraft has landed, wherein the **cellular infrastructure is accessed in response to the signal.**	See Claims 1 and 18	
Claim 20		
20. The method of claim 19 further comprising receiving said transmitted data at a **flight operations center.**	a location housing and/or in communication with a data reception unit.	**'990 Patent** FIG. 2 

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
		FIG. 11 
Claim 21		
21. The method of claim 20 further comprising receiving said transmitted data and transmitting said received data via the		

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
Internet before receiving said transmitted data at a flight operations center.		
Claim 25		
25. A computer-implemented method of transmitting aircraft **flight data** from an aircraft, comprising:	See Claim 1	
receiving flight data from a flight **data acquisition unit;**	See Claim 1	
processing said flight data to prepare said data for transmission; and		
transmitting said processed data via a **cellular infrastructure** after the aircraft has landed,	See Claim 1	
wherein processing said flight data includes:		
receiving a weight-on-wheels signal		
initiating a data		

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
transfer;		
compressing said flight data;		
encrypting said compressed data;		
creating a packet queue;		
starting a **primary data thread**;	thread: part of a computer program that runs independently or along with other threads to accomplish a task. primary data thread: a thread that causes the initial call to be made to the cellular infrastructure.	**'990 patent** "The primary data thread is started to make the initial call and open the communications channel to the flight operations center 18." (4:67-5:2). "The network layer 62 then routes the packets to one of up to 16 peer-to-peer protocol (PPP) threads running within the operating system 60 at a data link layer interface 64." (4:26-29). **IEEE Standard Dictionary of Electrical and Electronics Terms (6th ed. 1997)** Thread: "4. a single sequential flow of control within a process" (p. 1108).

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
waiting a predetermined period of time;		
determining **if any threads are active;**	if there are any data packets that have not been transmitted or have been transmitted and dropped	**'990 patent** "The processor determines if any threads are active, i.e., if there are any packets that haven't been transmitted or have been transmitted and dropped." (5:4-5:6).
repeating, when threads are active, the steps of waiting a predetermined period of time and determining if any threads are active; and		
exiting processing said flight data when no threads are active.		
Claim 33		
33. A computer readable medium having stored thereon instructions which when executed by a processor, cause the processor to perform the steps of:		

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
receiving **flight data** from a digital flight **data acquisition unit** in an aircraft, wherein said flight data is gathered in-flight by at least a first sensor on the aircraft, and includes time, airspeed, altitude, vertical acceleration, and heading data relating to a flight of the aircraft;	See Claim 1	
receiving a signal indicating a landing of the aircraft from at least a second sensor;	See Claim 1	
processing said flight data to prepare said data for transmission; and		
transmitting said processed data via a cellular infrastructure when said aircraft has landed, where the **cellular infrastructure is accessed in response**	See Claims 1 and 18	

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
to the signal.		
Claim 34		
34. The system of claim 1, wherein the cellular infrastructure, is a **cellular telephone infrastructure**.	See Claim 1 (cellular infrastructure)	
Claim 35		
35. The system of claim 34, wherein said data reception unit is in communication with said cellular infrastructure via the Internet.		
Claim 37		
37. The system of claim 34, wherein said data communications unit has at least one modem in communication with said cellular infrastructure and said data reception unit has at least one modem in communication with said cellular		

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
infrastructure.		
Claim 41		
41. The system of claim 15, wherein the cellular infrastructure is a **cellular telephone infrastructure**.	See Claim 1 (cellular infrastructure)	
Claim 44		
44. The method of claim 18, wherein the cellular communications infrastructure is a **cellular telephone infrastructure**.	See Claim 1 (cellular infrastructure)	
Claim 45		
45. The method of claim 19, wherein the cellular infrastructure is a **cellular telephone infrastructure**.	See Claim 1 (cellular infrastructure)	
Claim 46		
46. The method of claim 45 further comprising receiving said transmitted data at a **flight operations center**.	See Claim 20	

'990 Patent Claim Terms	Teledyne's Proposed Construction	Support
Claim 47		
47. The method of claim 46 further comprising receiving said transmitted data and transmitting said received data via the Internet before receiving said transmitted data at a flight operations center.		
Claim 51		
51. The method of claim 33, within the cellular infrastructure is a **cellular telephone infrastructure**.	See Claim 1 (cellular infrastructure)	